



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

MEMORANDUM

SUBJECT: Request for Concurrence on the Explanation of
Significant Differences for the Remedial Action at the
NL Industries/Taracorp Superfund Site, Granite City,
Illinois

FROM: William Muno, Director
Waste Management Division

Acting For Gail C. Ginsberg, Regional Counsel
Office of Regional Counsel

TO: Valdas V. Adamkus
Regional Administrator

By this memorandum we are recommending that you authorize the change in the remedial action at the NL Industries/Taracorp site by executing the attached Explanation of Significant Differences (ESD).

This ESD was prepared in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601 *et seq.*, the National Contingency Plan (40 CFR Part 300), and Agency Policy. We have reviewed the attached documents and have concluded that the ESD is both legally and technically sufficient. As such, we believe that the implementation of the remedial measure is a proper exercise of your delegated authority.

Please feel free to contact either one of us should you have any questions.

Concur

Valdas V. Adamkus
Valdas V. Adamkus
Regional Administrator

1/27/94

Not Concur

Valdas V. Adamkus
Regional Administrator

EXPLANATION OF SIGNIFICANT DIFFERENCES
FOR THE
NL INDUSTRIES/TARACORP SITE
GRANITE CITY, ILLINOIS

INTRODUCTION

The purpose of this document is to provide a brief background for the NL Industries Site (NL Site or the Site), and explain how remedial activities will differ from the Remedial Action (RA) selected by the United States Environmental Protection Agency (U.S. EPA) in the Record of Decision (ROD) signed on March 30, 1990.

U.S. EPA, in cooperation with the U.S. Army Corps of Engineers, is currently conducting the remedial design (RD) for the Site. Groundwater samples collected during RD indicate that lead concentrations in monitoring wells downgradient from the Taracorp pile exceed applicable state and federal standards. This data indicates that the Taracorp pile may be the source of groundwater contamination.

In accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA), and consistent with Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), U.S. EPA has determined that the change to the remedy constitutes a significant change to the remedy required in the March 30, 1990 ROD. The change, however, is not a fundamental reconsideration of the basic remedy selection on which comment was taken. This presents U.S. EPA's Explanation of Significant Difference (ESD) for the Remedial Action at the NL Site.

This ESD and corresponding documents will become part of the NL Site's administrative record file and are available for public review. The administrative record is available at the following locations:

Granite City Public Library
2001 Delmar Avenue
Granite City, Illinois 62040

U.S. Environmental Protection Agency
Region V Records Center
77 W. Jackson Blvd. (7HJ)
Chicago, Illinois 60604
phone: (312) 886-0900

SUMMARY OF SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The NL Site, located in Granite City, Madison (including Eagle Park Acres), and Venice, Illinois, is the location of a former secondary lead smelting facility. Metal refining, fabricating, and associated activities have been conducted at the Site since the turn of the century. From 1903 to 1983 secondary lead smelting occurred on-site. Secondary lead smelting operations

were discontinued during 1983 and the equipment dismantled. Taracorp Industries (Taracorp Incorporated prior to 1986), the current owner of the main industrial site, purchased the property from NL Industries, Inc., in 1979.

In July of 1981, St. Louis Lead Recyclers, Inc. (SLLR) began using equipment on adjacent property owned by Trust 454 to separate components of the Taracorp pile. The objective was to recycle lead-bearing materials to the furnaces at Taracorp and send hard rubber and plastic off-site for recycling. SLLR continued operations until March 1983 when it shut down its equipment. Residuals from the operation remain on Trust 454 property, as does some equipment.

A State Implementation Plan for Granite City was published in September 1983 by the Illinois Environmental Protection Agency (IEPA). The IEPA's Report indicated that the lead nonattainment problem for air emissions in Granite City was in large part attributable to emissions associated with the operation of the secondary lead smelter operated by Taracorp and lead reclamation activities conducted by SLLR. The IEPA procured Administrative Orders by Consent with Taracorp, St. Louis Lead Recyclers Inc., Stackorp, Inc., Tri-City Truck Plaza, Inc., and Trust 454 during March 1984. The Orders required the implementation of remedial activities relative to the air quality.

The NL Site was listed on the National Priorities List, 40 C.F.R. Part 300 (NPL), on June 10, 1986. NL, as former owner of the Site, voluntarily entered into an Agreement and Administrative Order by Consent with the U.S. EPA and IEPA in May 1985 to implement a Remedial Investigation and Feasibility Study (RI/FS). The RI/FS was completed in January 1990.

The RI for the NL Site indicated the need to prevent direct contact with and inhalation of lead-contaminated soils and waste materials in the Taracorp pile, the SLLR piles, and the main industrial site; residential soils contaminated by lead fallout from the smelter stack; and battery case material used as fill material for alleys, driveways, and other areas. Additionally, the RI indicated a need for further ground water monitoring in the deeper zone of the upper aquifer and a mechanism for remediation of any contaminants in the ground water that are detected in concentrations that would present an endangerment to public health and the environment.

Different alternatives to address Site contamination were evaluated in the NL Feasibility Study and Addendum, and after detailed analysis of the alternatives, a Proposed Plan was issued. After taking into consideration all public comments, the Regional Administrator signed a Record of Decision on March 30, 1990. The remedy specified therein consisted of the following components:

- o Installation of an upgraded security fence around the expanded Taracorp pile.
- o Deed Restrictions and other institutional controls to prevent access to the Taracorp pile.
- o Performance of soil lead sampling to determine which areas must be excavated and the extent of the excavation.
- o Inspection of alleys and driveways and areas containing surficial battery case material in Venice, Eagle Park Acres, Granite City, Madison and any other nearby communities to determine whether additional areas not identified in the Feasibility Study must be remediated as described below.
- o Performance of blood lead sampling to provide the community with current data on potential acute health effects associated with Site contamination.
- o Installation of a minimum of one upgradient and three downgradient deep wells, monitoring of ground water and air, and inspection and maintenance of the cap.
- o Removal and recovery of all drums on the Taracorp pile at a secondary lead smelter.
- o Consolidation of waste contained in adjacent St. Louis Lead Recyclers piles with the Taracorp pile.
- o Excavation and consolidation with the Taracorp pile or off-Site disposal of battery case material from all applicable alleys and driveways in Granite City, Madison, and Venice, Illinois, and any other nearby communities.
- o Excavation and consolidation with the Taracorp pile of all unpaved portions of the adjacent Trust 454, Rich Oil, and BV&G Transport properties with lead concentrations greater than 1000 ppm.
- o Excavation and consolidation with the Taracorp pile or off-Site disposal of all residential soils and battery case materials in Granite City, Madison, and Venice, Illinois, and any other nearby communities with lead concentrations greater than 500 ppm.
- o Inspection of the interiors of homes on property to be excavated to identify possible additional sources of lead exposure and recommend appropriate actions to minimize exposure.

- o Implementation of dust control measures during all remedial construction activities.
- o Construction of a RCRA-compliant, multi-media cap over the expanded Taracorp pile and a clay liner under all newly-created portions of the expanded Taracorp pile.
- o Development of contingency plans to provide remedial action in the event that the concentration of contaminants in ground water or lead or PM₁₀ (particulate matter greater than 10 microns) in air exceed applicable standards or established action levels, or that waste materials or soils have become releasable to the air in the future.
- o Development of contingency measures to provide for sampling and removal of any soils within the zone of contamination described by the soil lead sampling to be implemented above with lead concentrations above 500 ppm which are presently capped by asphalt or other barriers but become exposed in the future due to land use changes or deterioration of the existing use.

Negotiations between the U.S. EPA and potentially responsible parties (PRPs) at the NL Site to design and construct the Site remedy failed. The U.S. EPA has sued certain PRPs to compel them to perform the Site remedy and to collect penalties for their failure to do so. U.S. EPA has commenced the RD for the NL Site and has begun early actions to remediate the residential soil, beginning with the worst residential locations first, and the highly lead-contaminated battery case material that was used as fill material.

The remedy outlined in the ROD included a requirement to excavate all soils and battery case materials in Granite City, Madison, and Venice, Illinois, and other nearby communities with lead concentrations greater than 500 parts per million (ppm) which pass a test used to measure the toxicity of hazardous substances,¹ and consolidate this material with the Taracorp slag pile on the main industrial property (Taracorp pile). The remedy was modified to require that excavated battery case material with lead concentrations greater than 500 ppm which pass the TCLP test must be disposed of at an off-site landfill. This

¹The Toxicity Characteristic Leaching Procedure (TCLP) test will be used in evaluating the toxicity of hazardous materials. This test is required by the Resource Conservation and Recovery Act (RCRA). The TCLP test replaces the Extraction Procedure leach test (EP Toxic) previously required by RCRA and the ROD for this Site. This change is considered a non-significant change to the ROD.

change in the ROD was memorialized on May 7, 1993, in an Explanation of Significant Differences.

U.S. EPA started excavating battery case material in April 1993 and is currently planning to excavate soil from residential locations in Granite City, Madison, and Venice which exceed the 500 ppm cleanup level and pass the TCLP test (residential soil or soil which is not regulated as hazardous waste under RCRA). Based on results of sampling during the RD, it is anticipated that almost all of the material excavated from these residential locations will pass the TCLP test and, thus, would need to be consolidated with the Taracorp pile under the original ROD language.

DESCRIPTION OF THE SIGNIFICANT DIFFERENCE AND THE BASIS FOR THE DIFFERENCE

As discussed above, this ESD pertains only to the disposal of residential soil in Granite City, Madison, and Venice, Illinois which have lead concentrations greater than 500 ppm and pass the TCLP test (and therefore are not required to be sent to a RCRA regulated hazardous waste facility). The ROD initially required consolidation of soil which passes the TCLP test with the Taracorp pile. This ESD will change this provision of the ROD to allow for disposal of this soil off-site in a permitted landfill.

The primary basis for this ESD is groundwater samples taken during the RD. The groundwater data reveals that lead concentrations in monitoring wells downgradient from the Taracorp pile exceed applicable state and federal standards. This data indicates that the Taracorp pile may be the source of groundwater contamination and raises the possibility that the Taracorp pile may need to be recycled and/or disposed of off-site.

In order to avoid the possibility of excavating the residential soil twice and disposing of the residential soil as a hazardous waste, at greatly increased cost, due to mixing of the residential soil with the Taracorp pile, U.S. EPA has determined that residential soil should be disposed of off-site in a landfill.

SUMMARY OF ANALYSIS OF NINE EVALUATION CRITERIA

1) Overall Protection of Human Health and the Environment

This remedy is protective of human health and the environment by removing for off-Site disposal contaminated material which presents a health risk.

2) Compliance with State and Federal Regulations (ARARs)

The changes required by this ESD comply with federal and state

requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action. Material not previously required by the ROD to be removed from the Site will be sent to a facility permitted to accept such wastes.

3) Reduction of Toxicity, Mobility, or Volume Through Treatment

This ESD will not alter any provisions in the original ROD regarding reductions of toxicity, mobility, or volume of contaminated materials through treatment.

4) Short-Term Effectiveness

Site activities involve excavation, staging and transportation to an off-Site disposal facility of lead contaminated waste. These activities present potential for short term exposure. Dust suppression techniques will be used. It is sound environmental practice to avoid handling lead contaminated materials any more than absolutely necessary to avoid possible increased fugitive dust emissions and a greater likelihood of transportation accidents. Although this ESD requires the material to be transported further than initially required in the ROD, this remedy eliminates the possibility of handling the same contaminated materials twice during Site remediation. During transportation to, and disposal at the off-site disposal facility, proper handling procedures, and where appropriate, personal protection equipment and dust suppression techniques will also be employed.

5) Long-Term Effectiveness

The revised remedy utilizes permanent solutions to the maximum extent practicable for the Site. The U.S. EPA and IEPA believe that the remedy remains protective of human health and the environment.

6) Implementability

This remedy is readily implementable. Acceptance at a permitted landfill of residential soil which passes the TCLP test is anticipated.

7) Cost

The initial additional cost of the disposal in a landfill versus consolidating with the Taracorp pile is approximately \$2,100,000. This additional cost is justified due to the potential future cost savings of excavating and disposing of the residential soil a second time if the Taracorp pile is removed from the main industrial site. The savings is further increased because material which presently passes the TCLP test does not need to be disposed of at a RCRA regulated hazardous waste facility.

However, once the material is mixed with wastes in the Taracorp pile, which contains RCRA characteristic hazardous waste, the material may have to be disposed of at a hazardous waste facility. There is a significant increase in the cost of disposing of material at a hazardous waste facility.

8) State Acceptance

The Illinois Environmental Protection Agency has been given an opportunity to comment on this ESD and concurs with it.

9) Community Acceptance

The community commented on the possibility of removing or limiting the size of the Taracorp pile at the time of the ROD. Many members of the community expressed support for the removal of the Taracorp pile or limits on its size. The approach in this ESD is consistent with these views.

NL INDUSTRIES/TARACORP
UPDATE - ADMINISTRATIVE RECORD

<u>PAGES</u>	<u>DATE</u>	<u>TITLE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>
2	5/7/93	Administrative Record Update for 5/7/93 ESD	U.S. EPA	N/A
1	11/16/93	"Remedial Design for the NL Industries/Taracorp Site in Granite City, Illinois"	Brad Bradley U.S. EPA	NL File
4	12/93	Preliminary Estimate of Additional Cost of Off-Site Landfilling of Excavated Residential Soil	U.S. ACE	U.S.EPA

NL INDUSTRIES/TARACORP
UPDATE - ADMINISTRATIVE RECORD

PAGES	DATE	TITLE	AUTHOR	RECIPIENT
8	1992	"Sampling Artifacts and Potential Transport of Metal Colloids - San Fernando Valley Basin, California"	Wendell, Mayer Glanzman - CH ₂ M Hill Mayer - U.S. EPA	N/A
55	1/20/93	Letter enclosing Illinois Groundwater Regulations	Brian Culnan Illinois EPA	Brad Bradley U.S. EPA
1	2/17/92	"Highlights - Robert S. Kerr Environmental Research 1992"	Dr. Bob P	
100+	11/92	"Supplemental Groundwater Investigation-NL/Taracorp Superfund Site - Granite City, Illinois	Woodward-Clyde Consultants	N/A
4	12/89	Exerpts from "Risk Assessment Guidance for Superfund - Volume I"	U.S. EPA	N/A
6	3/89	"Superfund Ground Water Issue - Ground Water Sampling for Metals Analyses"	Puls, Barcelona	N/A
3	10/14/92	Risk Assessment Teleconference for Superfund - Meeting Minutes (RATS)	U.S. EPA	N/A
5	11/7/91	Meeting Notes of RATS - 10/8/91	Sonich - Mullen U.S. EPA	Addressees (30)
10	1987	"Should Ground Water Samples from Monitoring Wells be Filtered Before Laboratory Analysis"	Various	N/A
2	4/23/90	"EPA Region III QA Directives"	N/A	N/A
100+	2/16/93	"Final Work Plan for Remediation of Locations in Granite City, Madison, and Venice, Illinois, Associated with NL Industries/Taracorp Superfund Site"	OHM Corporation	N/A
80	3/29/90	55 Fed. Reg. 11798 "Hazardous Waste Management System; Identification and Listing of Hazardous Wastes; Toxicity Characteristics Revisions"	N/A	N/A
14	1992	"Metals in Groundwater: Sampling Artifacts and Reproducibility"	Puls, Clark, Bledsoe Powell, and Paul	N/A

NL INDUSTRIES/TARACORP
UPDATE - ADMINISTRATIVE RECORD

PAGES	DATE	TITLE	AUTHOR	RECIPIENT
2	7/31/92	"Filtered/Unfiltered Groundwater Analysis-Risk Assessment Perspectives"	Debra Forman U.S. EPA	Dick Willie U.S. EPA
13	April 1992	"Drinking Water Regulations and Health Advisories"	U.S. EPA	N/A
7	1992	"Suggested Modifications to Ground Water Sampling Procedures Based on Observations from the Colloidal Borescope"	Kearly, Korte, and Cronk	N/A
11	1992	"Acquisition of Representative Groundwater Quality Samples for Metals"	Puls, Powell	N/A
12	December 1990	"Environmental Research Brief"	Puls, Eychaner, and Powell	N/A
12	July 1991	"Environmental Research Brief"	Puls, Powell Clark, and Paul	N/A
2	3/15/93	U.S. EPA/Illinois EPA Approval Letters for Final Work Plan for the Removal of Hard Rubber Battery Case Material	Bradley, Culnan	Jude Hobza U.S. ACE
2	3/10/93	Letter Enclosing Cost Differential Estimate	S.L. Carlock U.S. ACE	Bradley
7	12/9/91	Letter Regarding Ground Water Sampling for Metals	Wm. Turpin Ballard, U.S. EPA	Ron Lester WPAFB
8	1992	"Transport of Inorganic Colloids Through Natural Aquifer Material: Implications for Contaminant Transport"	Puls, Powell	N/A



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77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

Date: NOV 16 1993

Subject: Remedial Design for the NL Industries/Taracorp Site in
Granite City, Illinois

From: Brad Bradley BB
Remedial Project Manager

To: NL File

The purpose of this memo is to explain that the March 1993 Pre-Design Field Investigation Report is the Remedial Design document for the NL Industries/Taracorp Site in Granite City, Illinois. This report contains everything that is necessary to implement a Remedial Action at the Site, with the exception of information on areas that were discovered to be contaminated with lead after the finalization of the report. An Addendum to the report will be prepared once data characterizing these additional contaminated areas is received.

RESIDENTIAL - RESIDENTIAL SOIL TO LANDFILL VS. TARACORP PILE

ASSUMPTIONS
 1. 300.00 LOTS TO TARA, 10 HOUSES = 25
 2. AVERAGE DEPTH OF EXCAVATION
 3-10 HOUR DAYS PER WEEK
 4. 74 YEARS DURATION
 4 WORK CREWS
 LABOR PRICES INCLUDE LABOR BUREAU
 4.50 WORK DAYS INCLUDES 48 DAYS A YEAR - WEATHER DELAYS, VACATION, ROTATIONS, MOB/DEMOS ETC.
 USACE GOVERNMENT ESTIMATE
 RESIDENTIAL SOIL EXCAVATION
 SEND TO LANDFILL

TYPICAL RESIDENTIAL LOT - 300.00 LOTS										LABOR		EQUIP		OTHER	
4.56 WORK DAYS															
LABOR															
RT															
HRB															
OT															
HRB															
1 FOREMAN	14.81	30.40	450.36	22.22	15.20	337.87	17.43								
2 RT	21.16	30.40	1,280.40	31.14	15.20	948.88	2,258.18								
1 EQ OPER	30.18	30.40	918.88	43.77	15.20	668.30	1,587.17								
ITEM TOTAL										4,803.24		5,044,217.80			
EQUIP															
1	EA	CA 250 BACKHOE	181.33	4.56	DAYS =	807.71									
1	EA	FRONT END LOADER	37.50	3.00	DAYS =	112.50									
1	EA	WHEEL EXCAVATOR	111.00	4.56	DAYS =	506.16									
1	EA	FORCAT	40.80	4.56	DAYS =	186.20									
1	EA	GENERATOR	21.80	4.56	DAYS =	99.78									
1	EA	PUMP	25.50	4.56	DAYS =	116.28									
ITEM TOTAL										1,456.10					
SITE EXPENDABLES															
4	MIN	12' X 12' X 2' AIS	30.00	4.56	DAYS =	178.75									
		W/GRUBBING ROLL	25.00	2.00	ROLLS =	50.00									
ITEM TOTAL										228.75					
SUBCONTRACTORS															
98 CU YDS * 1.3 = 128 TONS															
TOPSOIL															
			8.00	58.00	CU YDS =	464.00									
		SPECIAL SMALL 54.90 TON = 4.81 LOAD	10.00	4.80	LOADS =	48.00									
		SPECIAL DIRECTIONAL	10.00	58.00	CU YDS =	580.00									
		ROD	7.00	578.00	SCY YDS =	4,386.00									
		GRADING AND COMPACT	0.38	5,800.00	SCY YDS =	2,204.00									
		2.00 SUB-DAMAGE ITEMS	500.00	1.25		625.00									
ITEM TOTAL										9,093.40					
LABOR															
12 WORK DAYS															
RT															
HRB															
OT															
HRB															
1 FOREMAN	14.81	30.40	1,142.88	22.22	40.00	888.80	2,071.68								
2 RT	21.16	30.40	3,328.00	31.14	40.00	2,491.20	5,819.20								
1 EQ OPER	30.18	30.40	4,857.60	43.77	40.00	3,501.60	8,359.20								
ITEM TOTAL										18,277.80		0.00			
EQUIP															
1	EA	CA 250 BACKHOE	112.28	7.00	DAYS =	785.96									
1	EA	FRONT END LOADER	37.50	14.00	DAYS =	525.00									
1	EA	POWER	29.50	14.00	DAYS =	413.00									
1	EA	GENERATOR	21.00	14.00	DAYS =	294.00									
1	EA	PUMP	22.25	18.00	DAYS =	400.50									
ITEM TOTAL										2,208.75		0.00			
SITE EXPENDABLES															
5	MIN	12' X 12' X 2' AIS	112.50	12.00	DAYS =	735.00									
		W/GRUBBING ROLL	25.00	2.00	ROLLS =	50.00									
ITEM TOTAL										785.00					
SUBCONTRACTORS															
417 CU YDS * 1.3 = 542 TONS															
TOPSOIL															
			8.00	417.00	CU YDS =	3,336.00									
		SPECIAL SMALL 54.90 TON = 27 LOAD	110.00	27.00	LOADS =	2,970.00									
		SPECIAL DIRECTIONAL	10.00	417.00	CU YDS =	3,370.00									
		ROD	7.00	3,240.00	SCY YDS =	18,768.00									
		GRADING AND COMPACT	0.38	3,240.00	SCY YDS =	1,231.20									
ITEM TOTAL										3.00		0.00			
TOTAL MODIFICATION DURATION															
3 PLAYGROUNDS X 12 DAYS = 36 DAYS / 3 CREWS =															
1,200.00 LOTS X 4.56 DAYS = 5,472.00 / 4 CREWS =															
1,488.00 * 74/365															

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CONFIDENTIAL

ORDER FILE # 287,766,506
E I J BY 100 92459

3677480488

GRAND TOTAL \$2,582,108

16,758,710 = 5

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187
CHARACTER: ON FOR WASTES 1-CAN

MAINT. CABLE CO.	2.0	1.00	2.00
SUPPLIES	7.00	1.00	8.00
LAR TOTAL	7.00	1.00	8.00

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50
EXPENDABLES						150 TOTAL
TYPER						150 TOTAL

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

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1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

LABOR	MT	HR	WORK DAYS	OT	HR	150 TOTAL
1 BAMP. TECH	1770	9.00	180	7.50	17.50	17.50

NOTE: CHANGE LOTS IN BOX
ESTIMATE WILL ADJUST AUTOMATICALLY

LABOR	1,770	9.00	180	7.50	17.50	17.50
EQUIP						
80.0% OPR						
OTHER						
11.0% OMA						
7.0% PROFIT						

CORP MARK UP	2.00	2.00	2.00
S.A. 8%	2.00	2.00	2.00
UNDER PLS 1%	2.00	2.00	2.00
S.A. 3.5%	2.00	2.00	2.00
TOTAL	3,500.00	3,500.00	3,500.00
GRAND TOTAL	40,348.428	40,348.428	40,348.428

\$40,348.428 - cost to
TaraCorp pile